

**Upgrade kit for converter current limiter
4512 104 96751**



DMC Hamburg

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SERVICE MANUAL - UNIT

Upgrade kit for converter current limiting

Author: Thorsten Frenschek

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In case there are any questions concerning this manual,
please send this LOPAD via fax to 49/(0)40/5078 2481

File:Uk conv curr limit_26731AB

List of pages and drawings (LOPAD)

Manual Order No: 4512 984 26731
released: 01/2004

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2

3...10 (03.0)

Z-1 (03.0) A4

Z2-1 (b/03.0) A3 Converter R/F

Upgrade kit for converter current limiter

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Insulation sleeve for plug connectors	Z-1
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1. Introduction and technical data

1.1. Purpose of manual

This upgrade kit provides a converter current limiter and a current sensor.

This unit limits the actual primary resonance current (resonance frequency about 18.3 kHz).

The max. primary current value is about 720A.

In case of tube arcing or a short-circuit at the high-voltage side, the running current pulse is limited at 720A (max. 790A). The next pulse starts normally.

1.2. Items supplied

- 1 unit current limiter	4512 178 00241
- 1 current sensor 1:50	4512 104 91702
- 2 insulation sleeves	2422 034 21954
- Installation material	
- This manual	4512 984 26731
- FCO 742 00015	4512 980 60661

Note

One kit is necessary for each converter.

1.3. Compatibility

Converter 7E R/F 9890 000 02772 = 4512 104 7231X

OPTIMUS RAD – R/F – C.

1.4. Tools/material required

- Standard tool set
- Oscilloscope

1.5. Safety information

The general legal and factory safety recommendations for this X-ray equipment and the following recommendations must be strictly observed!

Start of operation and maintenance work and, especially, electrical work must only be executed by authorized persons.



Warning!

The system/component must be switched OFF during replacement work. Any X-ray unit produces ionizing radiation which may be harmful if not properly controlled. Therefore, it is recommended that this equipment be operated in accordance with the guidelines set down by the national council on radiation protection.

2. Installation

2.1. General

When room mains switch is present turn OFF the room mains switch.



Warning!

When handling PCBs take all necessary electro-static discharge (ESD) precautions!

2.2. Installation of the insulation sleeve for the plug connectors

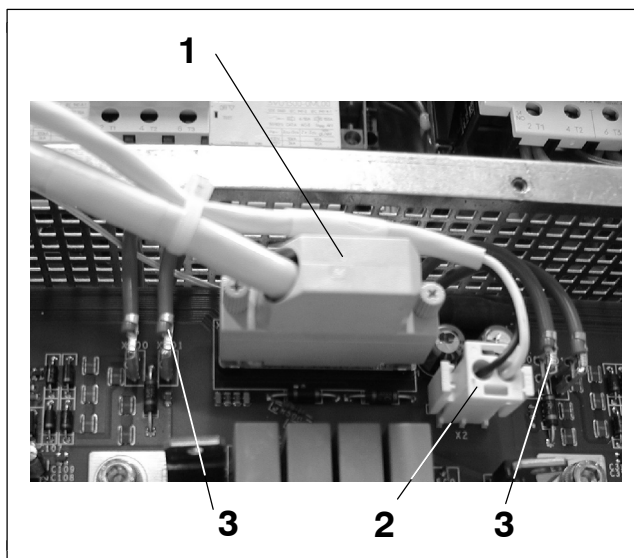


Warning!

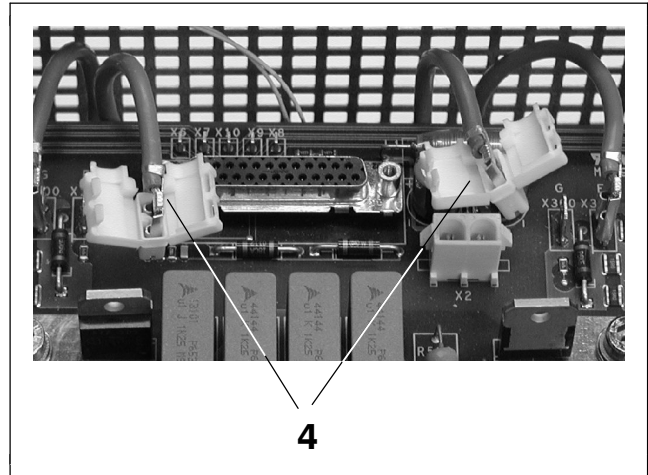
Dangerous capacitor voltage after switch-off. Discharge time 1 minute.

- Switch OFF the generator before starting any work.
- Turn OFF ENF1.
- Open the converter cover EQ and, when available, E2Q.

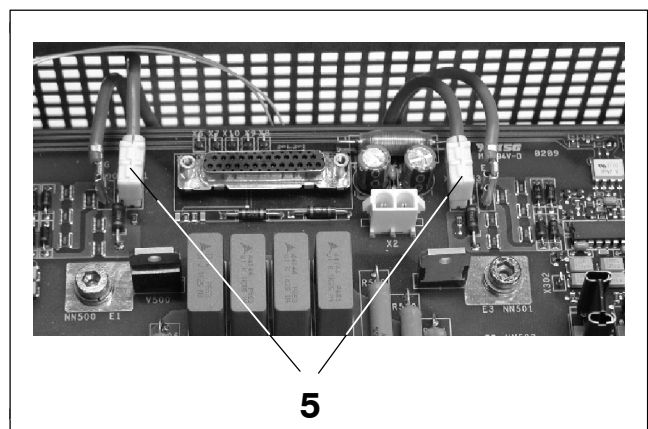
- Remove E(2)Q100 X1 (1).
- Remove E(2)Q100 X2 (2).
- Remove E(2)Q100 X101 and E(2)Q100 X300 (3).



- Put the disconnected plugs E(2)Q100 X101 and E(2)Q100 X300 into the insulation sleeve (4).
For information see Z-1
“Insulation sleeve for plug connectors”.

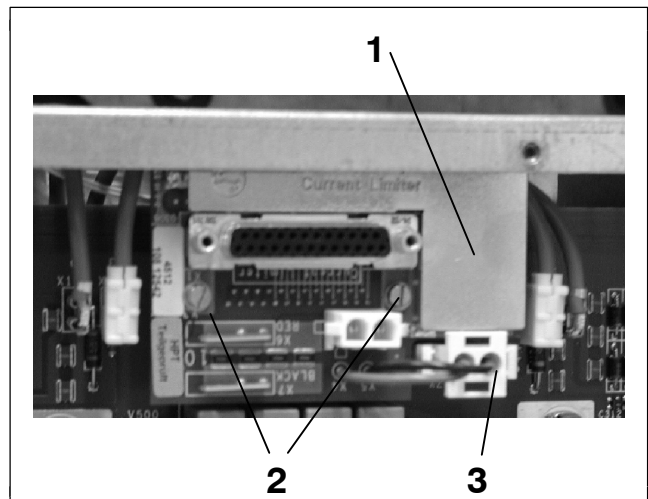


- Connect the modified plugs at E(2)Q100 X101 and E(2)Q100 X300 (5).



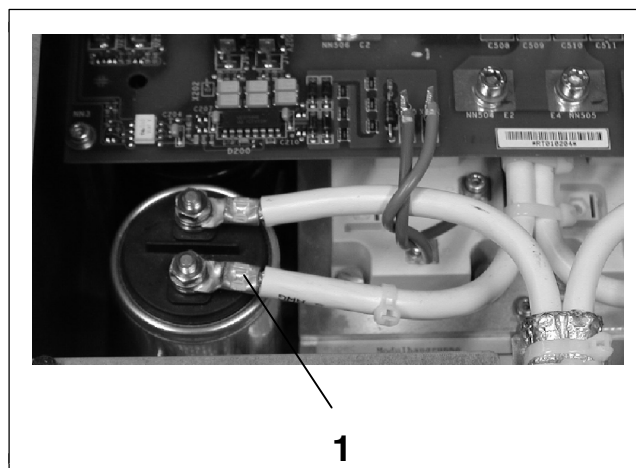
2.3. Installation of the PCB current limiter

- Install the PCB current limiter EQ 100E at EQ 100 X1 (1) (and, when available, at E2Q 100X1).
- Fasten the PCB with the two screws M3x12 (2).
- Connect the +26V power supply connection EQ 100E X:4/5 at EQ 100 X2 (3) (and, when available, E2Q 100E X:4/5 at E2Q 100 X2).

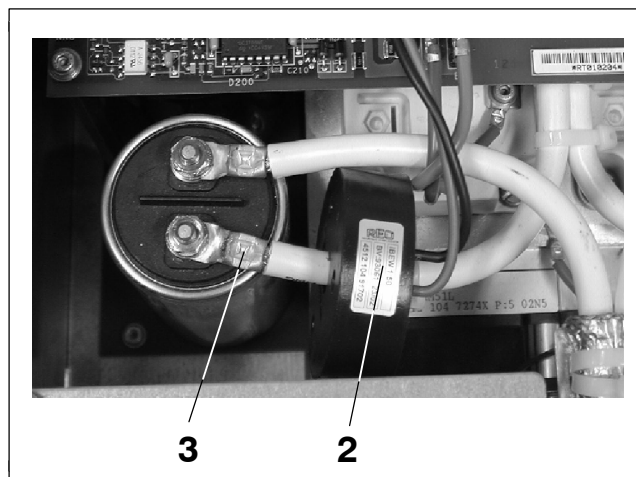


2.4. Installation of the current sensor

- Remove the wire from E(2)Q C3:2 (1).



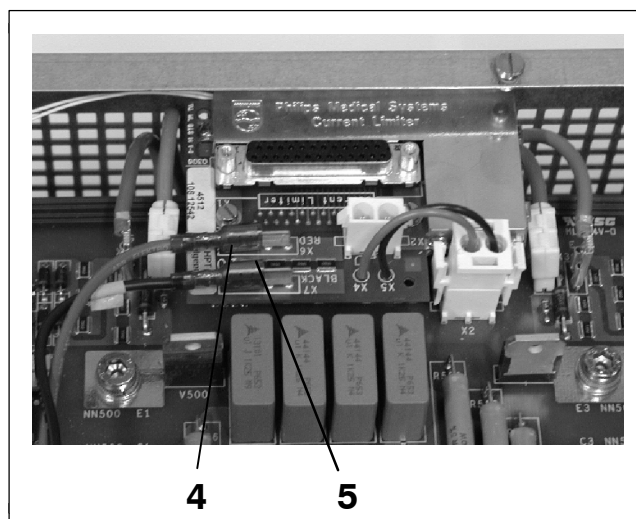
- Introduce the wire to EQ C3:2 trough the current sensor (2) (and, when available, to E2Q C3:2).
- Connect the wire with the current sensor at E(2)Q C3:2 (3).



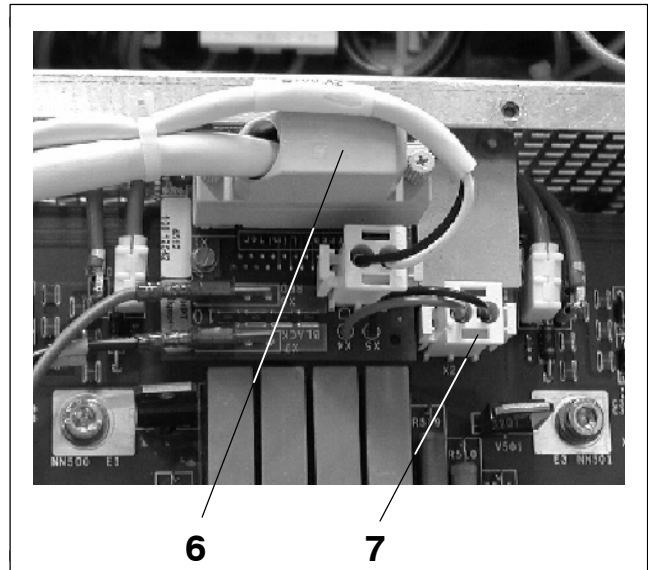
Note

The wires of the current sensor must face to the right hand side, the wire signed "L" (the black wire) is on the top.

- Connect the current sensor at the PCB current limiter:
red wire to E(2)Q 100E X6 (4)
black wire to E(2)Q 100E X7 (5)
(signed "L").



- Connect EQ 100E X1 with the cable for EQ 100X1 (**6**)
(and, when available, E2Q 100E X1 with the cable for E2Q 100 X1).
- Connect EQ 100E X2 with the cable for EQ 100 X2 (**7**)
(and, when available, E2Q 100E X2 with the cable for E2Q 100 X2).

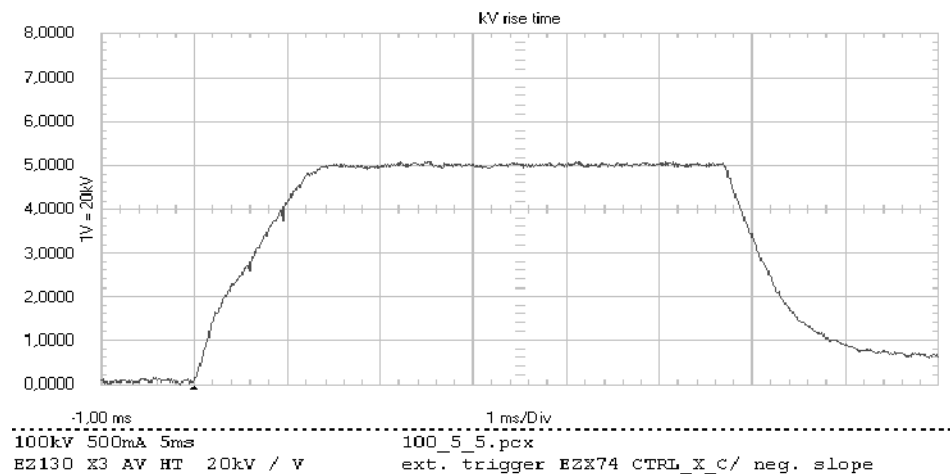


2.5. Test current limiter and current sensor

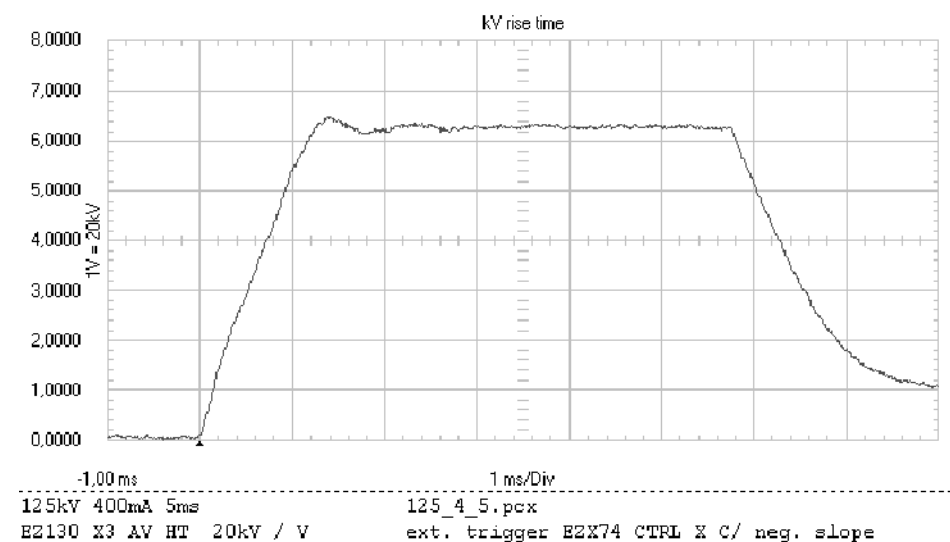
- Close the converter cover(s).
- Connect the oscilloscope probe at EZ 130 X3 actual value high voltage (1V/div., 1ms/div.)
and EZ 130 X6 GND.
- Use external trigger CTRL_X_C/ EZ X74 negative slope, -1 div. delay.
- Switch ON main fuses and ENF1.
- Turn ON the generator.
- Select 100KV, 500mA, 5ms.
- Release an exposure.
- Compare the resulting oscillogram with the respective oscillogram on the next page.
- Select 125KV, 400mA, 5ms.
- Release an exposure.
- Compare the resulting oscillogram with the respective oscillogram on the next page.
- Select max KV,333mA, 5ms.
- Release an exposure.
- Compare the resulting oscillogram with the respective oscillogram on the next page.
- Turn OFF the generator.

2.6. Diagrams for testing the current limiter and the current sensor

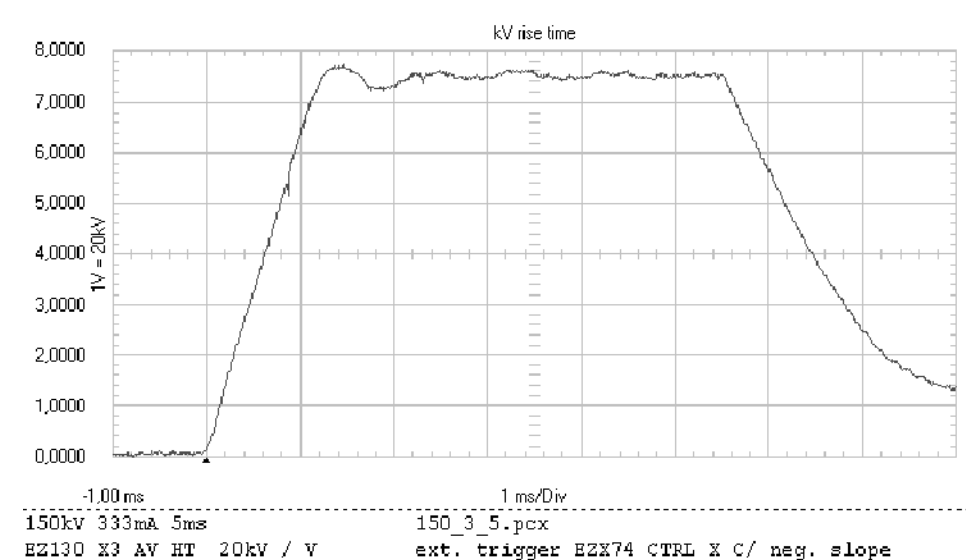
100kV 500mA 5ms



125kV 400mA 5ms



max kV 333mA 5ms



2.7. Final test

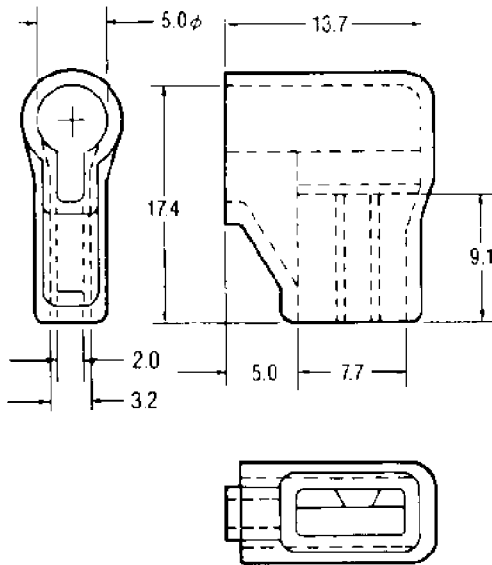
- Close the generator cabinet.
- Switch ON the generator.
- Test all applicable functions.

3. Documentation

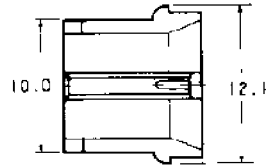
Insert this upgrade instruction manual into the

OPTIMUS service manual binder chapter 8 SERVICE INFORMATION.

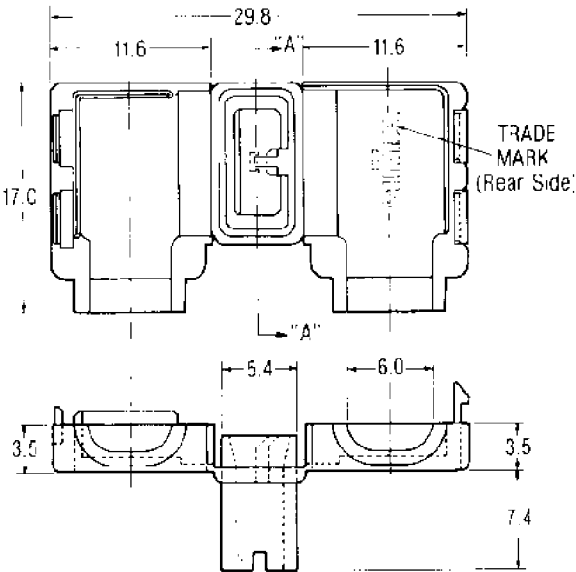
Insulation Sleeve



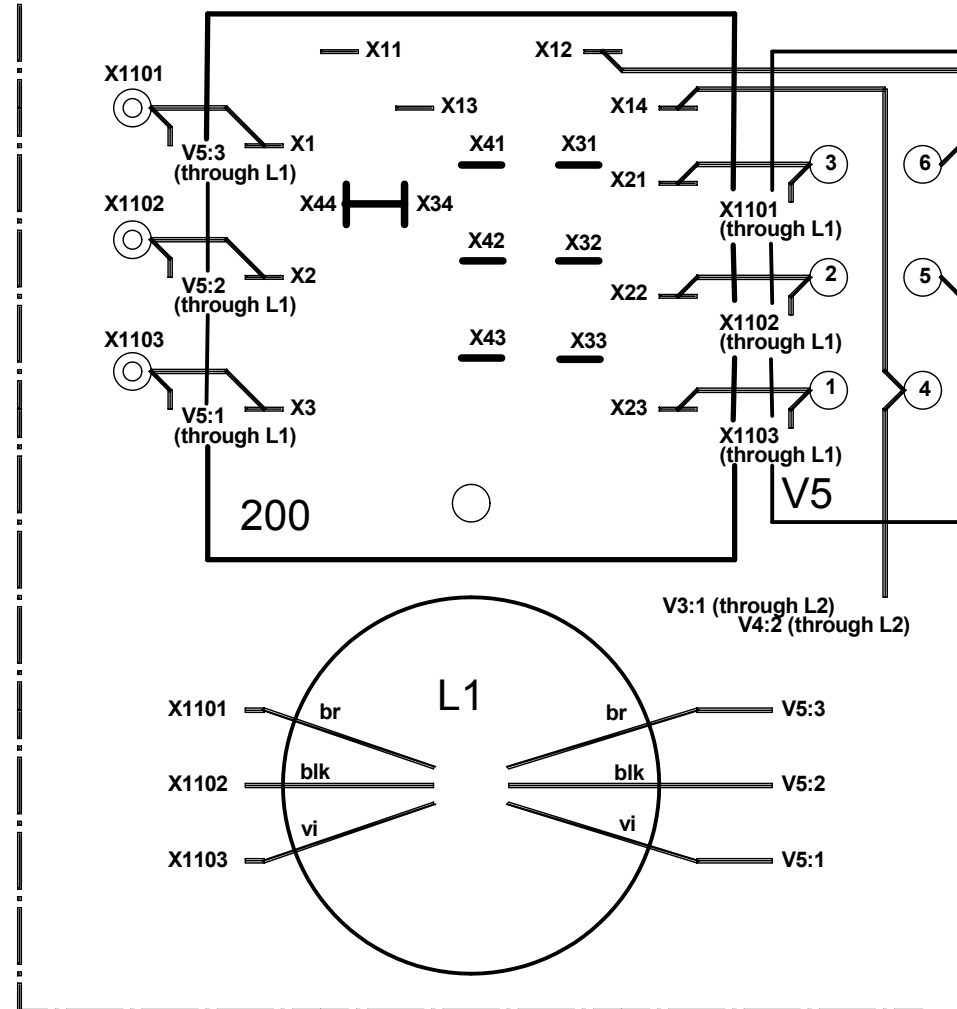
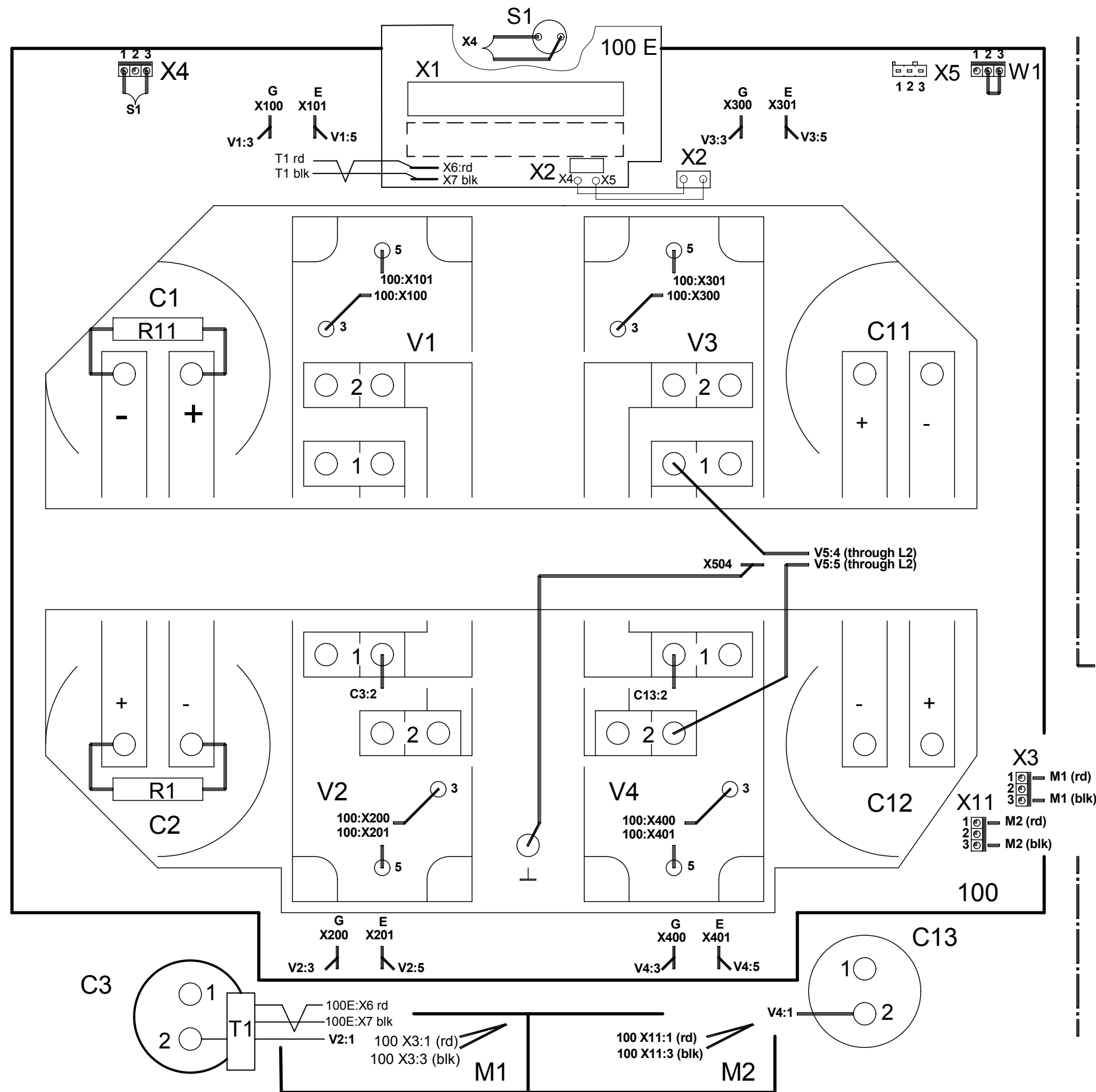
Sleeve Type



Section A-A



One Touch Sleeve



Q/2Q
kV power unit
4512 104 7231.